NO_2 in N_2	-	-	-	-	-	-	-	-24
NO_2 in 2% O_2/ 98% N_2	-6.1	6	6	-	-	-	-	-18
CO in N_2	18.1	-6	-12.1	-3	-6	72.5	28.5	18
N_2	18.1	-3	-	-	-6	-	18.1	21

	ZnO + 10% F3876	SnO_2 + 5% F2889	WO_3 + 10% F3876	$CuFe_2O_4$	Zn_4TiO_6	$ZnTiO_3$	Tm_2O_3	Yb_2O_3
NO_2 in N_2	-42	-6	-15	-6	-12	-6	-6	-6
NO_2 in 2% O_2/ 98% N_2	-24	-6	-18	-6	-	-	-	-
CO in N_2	12	24	6	-	6	-	-	-
N_2	27	9	18	-	6	-	-	-

	$Fe:ZrO_2$	$MnCrO_3$
NO_2 in N_2	-6	-
NO_2 in 2% O_2/ 98% N_2	-	-
CO in N_2	6	24
N_2	-	-

All of the measurements were obtained using 10 V, except that $BaCuO_{2.5}$ was measured with 4 V; Fe_2O_3 was measured with 1 V; ZnO + 2.5% F2889, ZnO + 10% F3876, SnO_2 + 5% F2889, Tm_2O_3, Yb_2O_3, $Fe:ZrO_2$ and $MnCrO_3$ were measured with 5 V; WO_3 + 10% F3876 was measured with 2 V; $CuFe_2O_4$ was measured with 6 V; and Zn_4TiO_6 and $ZnTiO_3$ were measured using 20 V.

Example 4

This example illustrates that a set of 4 metal oxide materials of Example 3 could be used to differentiate the 4 gas compositions shown at 600°C using the IR thermographic signals. The results are shown in Table 4 below. The signals are measurements of the differences in temperature (°C) of the materials when exposed to the gases shown relative to that in a

comparison gas which is 2% O_2/ 98% N_2. All of the signals were generated with 10 V across the materials, unless otherwise specified. Blank spaces indicate that there was no detectable signal when that gas composition was contacted with that material. Unless otherwise specified, the gases were measured at 2000 ppm in N_2.

Table 4

Change in temperature in °C

	$SrTiO_3$	Cu_2O	Fe_2O_3	$SrNb_2O_6$
NO_2 in N_2	3	-	-	-
NO_2 in 2% O_2/ 98% N_2	6	6	-	-
CO in N_2	-	-12.1	72.5	28.5
N_2	-	-	-	18.1

Example 5

This example demonstrates that this second set of 4 metal oxide materials of Example 3 could be used to differentiate the 4 gas compositions shown at 600°C using the IR thermographic signals. The results are shown in Table 5 below. The signals are measurements of the differences in temperature (°C) of the materials when exposed to the gases shown relative to that in a comparison gas which is 2% O_2/ 98% N_2. All of the signals were generated with 10 V across the materials, unless otherwise specified. Blank spaces indicate that there was no detectable signal when that gas composition was contacted with that material. Unless otherwise specified, the gases were measured at 2000 ppm in N_2.

Table 5

Change in temperature in °C

	ZnO	$AlVO_4$	$LaFeO_3$	$BaCuO_{2.5}$
NO_2 in N_2	-54.4	-	-	-
NO_2 in 2% O_2/ 98%	-48.3	-6.1	-	-

N_2				
CO in N_2	28.5	18.1	-3	-6
N_2	30.2	18.1	-	-6

Comparative Example A

This comparative example demonstrates that this set of 6 materials of Example 3 can not be used to differentiate the 2 gas compositions at 600°C using the IR thermographic signals, and illustrates the importance of the proper selection of materials. The results are shown in Table 5A below. The signals are measurements of the differences in temperature (°C) of the materials when exposed to the gas compositions shown relative to that in a comparison gas which is 2% O_2/ 98% N_2. All of the signals were generated with 10 V across the materials, unless otherwise specified. Blank spaces indicate that there was no detectable signal when that gas composition was contacted with that material. Unless otherwise specified, the gases were measured at 2000 ppm in N_2.

Table 5a

Change in temperature in °C

	SnO_2	WO_3	$FeTiO_3$	Ni O	SnO_2 + 5% F2889	$CuFe_2O_4$
NO_2 in N_2	-48.3	-18.1	-6.1	6	-6	-6
NO_2 in 2% O_2/ 98% N_2	-48.3	-18.1	-6.1	6	-6	-6

Comparative Example B

This comparative example demonstrates that this set of 3 materials can not be used to differentiate the 2 gas compositions at 600°C using the IR thermographic signals, and illustrates the importance of the proper selection of materials. The results are shown in Table 5B below. The signals are measurements of the differences in temperature (°C) of the materials when exposed to the gas compositions shown relative to that